

SOFTWARE



FOR IDIOM



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INTRODUCTION

Information Displays, Inc. is continually expanding its library of software for the IDIOM system.

This booklet outlines some of the principal packages now available.

MASTER OPERATING SYSTEM

The MOS-Master Operating System is designed to provide an operating interface between the computer system and the user. Through this communication link a user may conveniently and efficiently direct the order and the nature of the various processing tasks which the MOS is capable of performing.

The Executive consists of a control module and a load module. It utilizes the MOS input/output control program and the system loading program in order to direct and communicate with the user and with the assemblers, compilers, debugging aids and library routines.

Various tasks which may be performed under control of the Executive include assemblies, compilations, loading and execution of user and library programs, memory dumping, system preparation and maintenance, definition and configuration of I/O units, and magnetic tape positioning.

FORTRAN

The FORTRAN used with the IDIOM conforms with the USASI FORTRAN (Industry Standard FORTRAN IV). The standard FORTRAN is supplemented with graphic sub-routines, so that the FORTRAN programmer can easily use the IDIOM graphic capability.

The system is a one-pass compiler operating within an 8K or larger system. It offers a relocating-linking system loader producing a uniform relocatable format object output.

The system is adaptable to interface with other systems without loss of efficiency. If interfaced with higher performance peripherals, the system will utilize them to produce faster compilations.

ASSEMBLERS

IDAS

The IDIOM Assembly System (IDAS) allows programmers to write display files in an assembly language rather than machine language.

IDAS is a versatile program operable in either of two modes.

The first mode is an independent, two-pass assembler which defines and assembles IDIOM commands, then converts mnemonics into binary codes.

The second mode is a one-pass preassembler for processing programs having both IDIOM commands and Programmable Memory Unit codes (DAS Instructions).

DAS

The Data Assembly System (DAS) assists in simplifying program preparation. Instructions, addresses, etc. can be specified in a straightforward and meaningful manner. Twenty pseudo-operations aid in coding and debugging problems.

DAS permits label and instruction definition, location counter control, conditional assembly, assembler and subroutine control, and listing and punch controls.

A set of pseudo-ops provides FORTRAN compatible outputs and FORTRAN callable subroutines.

Both IDAS and DAS require at least 4K of memory. Both have provisions to utilize additional memory and peripheral equipment available to the system.

SPECIAL GRAPHIC SUBROUTINES

GRID SUBROUTINES

GRID, IDIOM's Grid Generating Subroutine, generates three types of graphs — linear grid, logarithmic grid and polar graph. The linear and logarithmic grids consist of horizontal and vertical grid lines. The logarithmic grids may be full logarithmic, log-lin or lin-log. The polar graph consists of concentric circles and 10 or 45 degree increments through the center of the circles.

The position and the density of the above grids are defined by the user. Calling a grid subroutine will construct a display file subroutine in the memory location specified by the calling sequence. The main display file should reference the constructed display subroutine with a Jump and Store Command.

GRID subroutines may be callable by FORTRAN as well as by program.

TRAK

TRAK is a light-pen tracking program which permits rapid hand movements with the light pen. This results in the broadest possible man-machine interaction involving the display unit, program and the fiberoptic light pen.

This is achieved by use of a unique hardware-software system approach.

Specifically the system provides a target signal on the CRT which will follow the light pen.

A call to TRAK enables the IDIOM's cycle timer. The cycle timer interrupt routine displays the tracking pattern. When the tracking pattern is detected within the light pen's field of view, coordinates of the center point are stored in the memory for main line program. Thus the main line program continually determines the current position to which the light pen is pointing.

Tracking will continue until the Cycle Timer is turned off by a call to a subroutine NOTK (No track).

TED

TED is a text editing subroutine. It enables the user to make insertions, deletions, and replacements of characters and words in text copy on the IDIOM screen.

A cursor on the screen indicates the point in the text at which TED is operating. Location of the cursor, as well as editing actions, are handled through the IDIOM's A/N keyboard.

DEBUG/DIAGNOSTIC

DEBUGGING PACKAGE

AID is a collection of useful debugging and utility routines for the Programmable Memory Unit (PMU). The following functions are provided to aid the programmers to debug their system while it is in memory; contents of any specified memory location in octal, modification of the specified memory location, initialize a block of memory to a value, search memory for values and contents, contents of a block of memory RUN from any part of memory, and set a breakpoint (trap) in memory to execute part of a program.

RAID, Rapid Aid, is an addition to AID in that it will do all those things specified in AID and have them displayed on the CRT screen.

MAINTAIN

MAINTAIN is a diagnostic package designed to assist in system maintenance. The engineer uses it to verify correct operations of the computer system elements and to detect failures or potential failures. This package will test the following:

Teletype driver — input and call signals;

Memory — address verification and memory pattern test

Teletype — accuracy, printable characters and teletype I/O

MAINTAIN will also accommodate additional peripheral equipment tests.

MEDIK

The MEDIK Diagnostic Program package consists of three separate programs to check out the Display Processing Unit:

Digital test — DPU registers, I/O Command and Display Files;

Console Interrupt and Lamp Test — function keyboard interrupts, keyboard lights, light pen interrupts and light pen switch;

Test patterns — display files, logic circuits, display patterns and operating capabilities.

AND . . .

SPECIAL APPLICATIONS SOFTWARE

Information Displays, Inc., can undertake development of software for your individual application of the IDIOM system.

This may involve preparation of the entire software package or consultation and augmentation of your own facilities.

As the leading specialists in interactive graphic CRT systems, IDI has experience in working with all models of large computers for such applications as Management Information Systems, Computer-Aided Design, Process or System Control, and Simulation.

DEMONSTRATION PROGRAMS

In addition to the fully supported software described in this brochure, IDI has developed a large number of demonstration programs which illustrate typical applications of interactive graphics. The programs, available at no charge to IDI customers, include 3-D hidden-line rotation, MIS, power system control on line graphics (GRAF), chess, and computer pool.

SUBROUTINE LIBRARY

The computer oriented Subroutine Library is a comprehensive facility which includes the most commonly used subroutines needed in a system environment. The library includes: logarithmic, exponential and trigonometric functions; fixed and floating point arithmetic; and operators for standard peripheral equipment. Conventions and standards are provided so the user can add application programs to their library.

There are two types of Subroutine Libraries provided by the IDIOM system: the computer-oriented subroutine library, and the graphics subroutine library. Each is callable through the standard instruction programs or through FORTRAN.

